Lab diagnosis of Neisseria

Neisseria meningtidis

	Septicaemia	Meningitis
specimens	Blood for culture (any bacteria isolated is significant to septicaemia)	1) CSF for gram stain culture and sensitivity test 2) blood for culture and sensitivity test
Doctor requests	Blood for culture and sensitivity test	1) CSF for gram stain culture and sensitivity test 2) blood for culture and sensitivity test

CSF:-

Normal characteristics are:

Sterile, colourless, clear, no clot, no blood stripes.

Abnormal characteristics:

Cloudy, clot (not watery), turbid.

3 pipes of CSF for 3 types of tests:

1) Microbiology test
2) Biochemistry test
3) Haematology test

Microbiology test:

- Gram stain (result after 10 minutes)
  Result will be: - no bacteria are seen
    - Gram negative diploccci (Neisseria meningtidis)
    - Gram positive diplococci (strept. pneumonia)
    - Gram negative rods (H. influenza, enteric bacteria, E.coli)
- Culture and sensitivity (both are done on chocolate agar)
- Rapid latex slide agglutination reaction:
  With antiserum of:
  - N.meningtidis, if the result is positive then it is the causative organism.
  - H.inflenzae, if the result is positive then it is the causative organism.
  - S.pneumonae, if the result is positive then it is the causative organism.

Biochemistry test:

- Test for glucose level:
  Normal glucose level in CSF must be ½ or 2/3 of person's blood glucose
  e.g.: if patient's blood glucose is 90mg/dl, the CSF glucose will be 45 – 60 mg/dl.

If patient's blood glucose is 120mg/dl, the CSF glucose must be 60 – 90 mg/dl. Any decrease in CSF glucose level is significant for bacterial meningitis infection; increase in CSF glucose is not significant.

- Test for proteins:
  Normal CSF total protein is 25 – 40 mg/dl.
  Any increase in CSF total proteins is significant for bacterial meningitis infection.

Haematology test:

- Total WBC count:
  Normal CSF WBCs is less than 5 cells/mm^2.
- Differential:
  Increase in neutrophils level is significant for bacterial infection.
  Increase in lymphocytes level is significant for viral infections and TB meningitis.

	NORMAL CSF	CSF IN BACTERIAL MENINGITIS
MICROBIOLOGY	GRAM: no bacteria seen CULTURE: no growth	GRAM: gram negative diplococci, positive diplococci or negative rods CULTURE: grow on chocolate agar
BIOCHEMISTRY	GLUCOSE: 1/2 OR 2/3 of blood glucose PROTEINS: 25-40 mg/dl	GLUCOSE: decreases PROTERINS: increase
HAEMATOLOGY	WBC: less than 5mm^2	WBC :number increases Neutrophils increase in number

Neisseria gonorrhoea:

	male	female
specimen	Urethral discharge for : 1) Gram stain. 2) culture and sensitivity test	Cervical swab is more preferred for gram stain

Also vaginal swab for Thayer Marten agar for carriers.

In case of pharyngitis caused by N. gonorrhoea, the specimen will be throat swab.

Results in gram stain test:

- Gram negative diplococci seen intracellular and extracellular with pus cells.
- No bacteria seen.